

DaimlerChrysler AG

and

Götting KG

5

Patent claims

1. A control system for a vehicle (3) in particular
for a combination of a towing vehicle (21) and trailer
10 (22)

- the vehicle (3) being equipped with an electronically actuatable drive train (2) which comprises at least one steering system (6), a brake system (7) and a drive assembly (4),
- 15 - an operator control device (10) being provided into which a vehicle driver inputs a driver request (FW) and which generates a standardized movement vector (BV) from the driver request (FW),
- a control device (12) being arranged in the
20 vehicle (3), said control device (12) generating control signals (SS) at the output end from an input-end movement vector (BV) in order to actuate the drive train (2) and being coupled to the drive train (2) in order to transmit the control signals (SS), and the drive train processing the control
25 signals (SS) in order to implement the driver request (FW),

wherein

- a drive-train interface (11) is provided via which
30 the operator control device (10) is coupled to the control device (12) in order to transmit the movement vector (BV),
- wherein an orientation- and position-determining device (14) is provided, which continuously
35 determines actual values for the orientation and position of the vehicle (3) and which is coupled to a path computer (13) in order to transmit the actual values,

- wherein a destination-inputting device (15) is provided, into which setpoint values for the orientation and position of the vehicle (3) can be input and which is coupled to the path computer (13) in order to transmit the setpoint values,
 - wherein the path computer (13) calculates a movement path from the actual values and setpoint values, which movement path is composed of a sequence of standardized movement vectors (BV) which move the vehicle (3) from the actual orientations and positions into the setpoint orientations and positions when the movement vectors (BV) of the movement path are processed,
 - wherein the path computer (13) is coupled to the control device (12), in addition to the operator control device (10), via the drive train interface (11) in order to transmit the movement vectors (BV).
2. The control system as claimed in claim 1, wherein the path computer (13) is designed to calculate such a movement path in which the vehicle (3) moves backward or which contains at least one movement path section in which the vehicle (3) moves backward.
3. The control system as claimed in claim 1 or 2, wherein the path computer (13) is designed to calculate such a movement path which contains an end section in which the vehicle (3) reaches the setpoint values for orientation and position by traveling backward and which contains a section which precedes the end section and in which the vehicle (3) assumes, by traveling forward, an intermediate position which permits the setpoint values to be obtained by the backward travel.
4. The control system as claimed in one of claims 1 to 3, wherein the path computer (13) takes into account vehicle ambient conditions in the calculation of the

movement path.

5. The control system as claimed in claim 4, wherein
an input device (15, 16) is provided via which the
5 vehicle ambient conditions can be conveyed to the path
computer (13).

6. The control system as claimed in claim 4 or 5,
wherein a sensor system (17) is provided which senses
10 the conditions in the surroundings of the vehicle (3)
and conveys them to the path computer (13).

7. The control system as claimed in one of claims 4
to 6, wherein the vehicle ambient conditions comprise
15 at least one of the following conditions:

- profile of the road,
- minimum distance from obstacles.

8. The control system as claimed in one of claims 1
20 to 7, wherein the path computer (13) continuously
updates the movement path by means of current actual
values.

9. The control system as claimed in one of claims 1
25 to 8, wherein a transceiver arrangement (18) is
provided via which the path computer (13) is connected
to the drive train interface (11).

10. The control system as claimed in one of claims 1
30 to 9, wherein the drive train (2) also comprises a
transmission (5) and/or a ride level control device
(8).

11. The control system as claimed in one of claims 1
35 to 10,

- wherein the vehicle is a combination (3) of a
towing vehicle (21) and a trailer (22),
- wherein the orientation- and position-determining

device (14) determines the actual values for the orientation and position of the towing vehicle (21) and of the trailer (22),

- wherein the setpoint values for the orientation and position of the towing vehicle (21) and/or of the trailer (22) can be input into the destination-inputting device (15).

5